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(54) **SELF INITIATED PRONE PROGRESSIVE CRAWLER**

(75) Inventors: **Peter E. Pidcoe**, Mechanicsville, VA (US); **Hlapang A. Kolobe**, Edmond, OK (US)

(73) Assignees: **Virginia Commonwealth University**, Richmond, VA (US); **The Board of Regents of the University of Oklahoma**, Norman, OK (US)

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See application file for complete search history.

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Primary Examiner — John Q Nguyen
Assistant Examiner — Aaron Smith
(74) *Attorney, Agent, or Firm* — Whitham Curtis Christofferson & Cook, PC

(57) **ABSTRACT**

A self initiated prone progressive crawler facilitates crawling in infants by sensing the infant's intent and assisting movement. The device is designed as a mobility aid to assist an infant in prone locomotion. The infant can be placed in a prone position on a platform and secured with hook and loop straps. The arms and legs are unconstrained and are able to reach the floor comfortably. The self initiated prone progressive crawler is a motorized wheeled platform which has three points of contact with the ground. One point is an industrial trackball, mounted upside down to provide positional and positional derivative data to a controller. It is located roughly under the chest of the infant and is highly sensitive to movement. The other points of contact are two DC torque motors which are controlled by the controller. In addition to the positional and positional derivative data provided to the controller, the controller also receives data from four equally spaced load cells on a force plate and tn-axial accelerometer gyros attached to the upper and lower extremities of the child. The load cells provide force information between the infant and the device to allow weight shifts to be assessed and used as a control parameter. The accelerometer gyros generate data that provides patterns that can be correlated with crawling movements.

21 Claims, 13 Drawing Sheets